

Missouri Department of Natural Resources



PUBLIC NOTICE

APPLICATION FOR MISSOURI STATE OPERATING PERMIT

DATE: September 15, 2006

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed effluent limitations and/or determinations are invited to submit them in writing to the Department of Natural Resources, Southwest Regional Office, Water Pollution Unit, 2040 W. Woodland, Springfield, Missouri 65807, ATTN: Kevin Hess, Water Pollution Section Chief. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The department may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App.1979).

All comments must be postmarked by October 15, 2006 or received in our office by 5:00 p.m. on October 18, 2006. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits, comments, and other information including copies of applicable regulations are available for inspection and copying at the department's website, <http://www.dnr.mo.gov/env/wpp/wpcp-pn.htm> or at the Department of Natural Resources, Southwest Regional Office, Water Pollution Unit, 2040 W. Woodland, Springfield, Missouri 65807, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: September 15, 2006

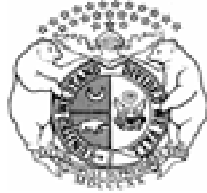
Permit Number: MO-0130591

Southwest Regional Office

FACILITY NAME AND ADDRESS	NAME AND ADDRESS OF OWNER
Sunny Slope Country Club Drive Sewer District WWTF Lake Road 54-79 Camdenton, MO 65020	Camden County Commission #1 Court Circle, Suite 1 Camdenton, MO 65020
RECEIVING STREAM & LEGAL DESCRIPTION	TYPE OF DISCHARGE
Lake of the Ozarks SW ¹ / ₄ , NW ¹ / ₄ , SW ¹ / ₄ , Sec. 34, T38N, R17W Camden County	Domestic, new

This is a re-notice of the August 13, 2004 Public Notice. The regulation for Ammonia was changed in December 2005 (10 CSR 20-7 Table B) and the permit must be updated to meet these requirements. Permit language is also being updated.

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended.

Permit No.

MO-0130591

Owner:

Address:

Camden County Commission

#1 Court Circle, Suite 1, Camdenton, MO 65020

Continuing Authority:

Address:

Same as above

Same as above

Facility Name:

Facility Address:

Sunny Slope Country Club Drive Sewer District WWTF

Lake Road 54-79, Camdenton, MO 65020

Legal Description:

Receiving Stream:

First Classified Stream and ID:

USGS Basin & Sub-watershed No.:

SW¹/₄, NW¹/₄, SW¹/₄, Sec. 34, T38N, R17W, Camden County

Lake of the Ozarks (L2) 303(d)

Lake of the Ozarks (L2) (07205) 303(d)

(10290110-030009)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 - POTW - SIC #4952

Septic tank / recirculating filter / chlorination / dechlorination / sludge disposal by contract hauler.

Design organic population equivalent is 1,348.

Design average daily flow is 162,000 gallons per day.

Design sludge production is 9.7 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date
MO 780-0041 (10-93)

Cynthia S. Davies, Regional Director, Southwest Regional Office

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 2 of 7	
					PERMIT NUMBER MO-0130591	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Flow	GPD	*		*	once/week**	24 hr. total
Biochemical Oxygen Demand ₅	mg/L	40		20	once/month**	24 hr. composite
Total Suspended Solids	mg/L	40		20	once/month**	24 hr. composite
pH – Units	SU	***		***	once/month**	grab
Fecal Coliform (Note 1) >	#/100 ml	1000		400 (Note 2)	once/month**	grab
Total Residual Chlorine as Cl ₂	mg/L	0.02 (Note 3) (0.13 ML)		0.009 (Note 3) (0.13ML)	once/month**	grab
Ammonia as N	mg/L	12.1		6.0	once/month**	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) Test	% Survival	See Special Condition			twice/permit cycle in 2007 & 2009	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED TWICE PER PERMIT CYCLE ; THE FIRST REPORT IS DUE <u>OCTOBER 28, 2007</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I, II & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** Reports shall be submitted by the 28th day of the month following the reporting period, e.g. Reporting period is the month of March (samples collected monthly), report due by April 28th.
- *** pH is measured in pH units and is not to be averaged. The pH for all facilities except lagoons is limited to the range of 6.0-9.0 pH units.

Note 1 - Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.

Note 2 - Monthly average limit for Fecal Coliform is expressed as a geometric mean. Geometric mean for

$$n \text{ samples} = [a_1 \times a_2 \times a_3 \dots \times a_n]^{1/n}$$

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 3 - This permit contains a Total Residual Chlorine (TRC) limit.

- (a) This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The department has determined the current acceptable ML for total residual chlorine to be 0.13 mg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 0.13 mg/L will be considered violations of the permit and values less than the minimum quantification level of 0.13 mg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.
- (b) Disinfection is required year-round unless the permit specifically states that "Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31." If your permit does not require disinfection during the non-recreational months, do not chlorinate in those months.
- (c) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit.**
- (d) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 mg/L" TRC.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;

C. SPECIAL CONDITIONS (continued)

- (4) The level established in Part A of the permit by the Director.
 - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
5. Report as no-discharge when a discharge does not occur during the report period.
6. Water Quality Standards
 - (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
 - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
 - (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
 - (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

C. SPECIAL CONDITIONS (continued)

8. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
001	100	Twice per permit cycle in 2007 & 2009	24 hour composite	August

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a single-dilution test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the department's WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
 - a. For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
 - b. Samples submitted for analysis of stormwater discharges shall be collected as a grab.
 - c. For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation.
 - d. A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
 - e. Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
 - f. Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
 - g. Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
 - h. Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.
 - i. All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.
 - j. Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.
 - k. Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.
 - l. Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
- (2) All failing test results along with complete copies of the test reports as received from the laboratory, including those tests conducted under condition (3) below, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
- (3) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days and biweekly thereafter, until one of the following conditions are met:
 - a. Three consecutive multiple-dilution tests pass. No further tests need to be performed until next regularly scheduled test period.
 - b. A total of three multiple-dilution tests fail.

C. SPECIAL CONDITIONS (continued)

- (4) Failure of at least three multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.
- (5) The permittee shall submit a CONCISE summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
- (6) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
- (7) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
- (8) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
- (9) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the department's WET test report form that was generated during the reporting period.
- (10) Submit a concise summary in tabular format of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms or other federal guidelines as appropriate or required.
- (2) To pass a multiple-dilution test:
 - a. For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC), OF 30% OR LESS THE AEC must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; **OR**,
 - b. For facilities with an AEC greater than 30% the LC_{50} concentration must be greater than 100%; **AND**,
 - c. All effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

(c) Test Conditions

- (1) Test Type: Acute Static non-renewal

C. SPECIAL CONDITIONS (continued)

- (2) Test species: *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
- (3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
- (4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
- (5) Single-dilution tests will be run with:
 - a. Effluent at the AEC concentration;
 - b. 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - c. reconstituted water.
- (6) Multiple-dilution tests will be run with:
 - a. 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
 - b. 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - c. reconstituted water.
- (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
- (8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.



Missouri Department of Natural Resources
Southwest Regional Office
NPDES PERMITS AND ENGINEERING SECTION

Water Quality Review Sheet
Determination of Effluent Limits

Facility Information

FACILITY NAME: Sunny Slope Country Club Drive Sewer District WWTF NPDES #: MO-0130591

FACILITY TYPE/DESCRIPTION: 0.162 MGD recirculating sand filter plant with chlorine disinfection.

EDU*: Ozark / Osage 8- DIGIT HUC: 10290110 COUNTY: Camden

* - Ecological Drainage Unit

LEGAL DESCRIPTION: SW¹/₄, NW¹/₄, SW¹/₄, Sec. 34, T38N, R17W LATITUDE/LONGITUDE: +3759175 / - 09247344

WATER QUALITY HISTORY: New facility, no historical water quality data.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.25	Secondary	Lake of the Ozarks	< 0.1

Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES **
			1Q10	7Q10	30Q10	
Lake of the Ozarks	L2	07205	289	423	444	LWW, AQL, WBC, SCR

** Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND)

COMMENTS: Lake of the Ozarks is on the Missouri 2002 303(d) list for low dissolved oxygen, fish trauma, and gas supersaturation from Truman Dam. However the proposed Sunny Slope Country Club Drive facility is far down-lake from the dam and should not add to the impairment.. This replaces the WQRS dated August 3, 2004.

Mixing Considerations

Mixing Zone (MZ): Not to exceed one-quarter (1/4) of the lake width at the discharge point or one hundred feet (100') from the discharge point, whichever is less. [10 CSR 20-7.031(4)(A)5.8.(IV)(a)]

Zone of Initial Dilution (ZID): Not allowed [10 CSR 20-7.031(4)(A)5.B.(IV)9b)]

	Flow (cfs)	MZ (cfs)	ZID (cfs)
<u>7Q10</u>	423	105.75	N/A
1Q10	289	72.25	N/A
30Q10	444	111	N/A

Applicable mixing zone regulation:

Permit Limits and Information

WASTELOAD ALLOCATION
STUDY CONDUCTED (Y OR N):

N

USE ATTAINABILITY
ANALYSIS CONDUCTED (Y OR N):

N

WHOLE BODY CONTACT
USE RETAINED (Y OR N):

Y

OUTFALL #001

WET TEST (Y OR
N):

Y

FREQUENC
Y:

ONCE/YEAR

AEC: 100%

METHOD: SINGLE

A.E.C. % = ()⁻¹X100

Design Flow + Zone of
Initial Dilution
Design Flow

PAR.		WEEKLY AVERAGE	MONTHLY AVERAGE	MONITORING FREQUENCY
FLOW	MONITOR		MONITOR	Weekly
BOD ₅ (MG/L)	40		20	Monthly
TSS (MG/L)	40		20	Monthly
PH (S.U.)	6-9		6-9	Monthly
AMMONIA AS N (MG/L)	12.1		6.0	Monthly
FECAL COLIFORM (COLONIES/100 mL)	1000		400	Monthly
TOTAL RESIDUAL CHLORINE (MG/L)	0.1		0.1	Monthly
OIL & GREASE (MG/L)	15		10	Monthly

Please report the date, time, and location for each parameter sampled along with the average daily flow (actual flow measured or estimated, not design flow). All the parameters should be sampled on the same day and within no more than a 2-hour period. Dissolved oxygen (DO) measurements are to be taken during the period from one hour prior to sunrise to one and one-half hour after sunrise. If discharge is contingent to storm events, rainfall should be measured every time there is a discharge.

Derivation and Discussion of Limits

Wasteload allocations were calculated using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration
 Cs = upstream concentration
 Qs = upstream flow
 Ce = effluent concentration
 Qe = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Biochemical Oxygen Demand (BOD₅) Lake limits apply – 20 mg/L monthly average (10 CSR 20-7.015(3)(B)1). Daily limits calculated by $(20 \times 3.114) / 1.5524 = 40$ mg/L daily maximum.

Total Suspended Solids (TSS) Lake limits apply – 20 mg/L monthly average (10 CSR 20-7.015(3)(B)1). Daily limits calculated by $(20 \times 3.114) / 1.5524 = 40$ mg/L daily maximum. 10 CSR 20-7.015(3)(B)1

PH: shall be maintained in the range from six to nine (6-9) standard units (10 CSR 20-7.015(3)(B)2).

Ammonia as Nitrogen. Total Ammonia Nitrogen – Early Life Stages Present criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B.] No. 9, Page 847].

Chronic Ammonia as Nitrogen calculations are based on the volume of flow in the Mixing Zone or the 30Q10, whichever is less. Acute Ammonia as Nitrogen calculations are based on the volume of flow in the Zone of Initial Dilution or the 1Q10, whichever is less.

Acute criteria was only reviewed because there is no zone of initial dilution, therefore the flow is zero (0). Chronic is based on either the mixing zone or 30Q10, which both flows are fairly large.

Acute at pH of 7.8 =
 WLA_a = 12.1 mg/L

LTA_a = 12.1 (0.321) = 3.9 mg/L

[CV = 0.6, 99th Percentile]

MDL = 3.9(3.114) = 12.1 mg/L

[CV = 0.6, 99th Percentile]

AML = 3.9(1.5524) = 6.04 mg/L

[CV = 0.6, 95th Percentile, n = 30]

Fecal Coliform: Lake limits apply – 400 #/100mL monthly average and 1,000 #/100 mL (10 CSR 20-7.015(3)(B)(3)).

Total Residual Chlorine. Warm water acute criteria = 19 g/L, warm water chronic criteria = 10 g/L [10 CSR 20-7.031, Table A]. Background = 0.0 mg/L. Mixing zone allowed. Zone of Initial not allowed. .

Chronic: $C_e = ((0.25 + 105.75 \times 0.01 - 105.75 \times 0) / 0.25) = 4.24$ mg/L = WLAc

Acute: $C_e = ((0.25 + 0 \times 0.01 - 0 \times 0) / 0.25) = 0.019$ mg/L = WLAa

$$LTA_c = 4.24(0.527) = 2.236176 \text{ mg/L}$$

[CV = 0.6, 99th Percentile]

$$LTA_a = 0.019(0.321) = 0.006101 \text{ mg/L}$$

[CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a . = 0.006101 mg/L

$$MDL = 0.006101(3.11) = 16.5 \text{ g/L} = 0.02 \text{ mg/L}$$

[CV = 0.6, 99th Percentile]

$$AML = 0.006101(1.55) = 8.2 \text{ g/L} = 0.009 \text{ mg/L}$$

[CV = 0.6, 95th Percentile, n = 4]

Oil & Grease

As per 10 CSR 20-7.031 – Table A. the in-stream chronic Oil and Grease limit is 10 mg/L, and since oil and grease do not mix with water, the result is the elimination of dilution as a means to comply with in-stream water quality standards.

Daily Maximum = 15 mg/L

Monthly Average = 10 mg/L

Reviewer: Kristen Pattinson

Date: August 23, 2006

Unit Chief: Gale Roberts, P.E.

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data are available that may affect the recommended monitoring and effluent limits, please forward these data to the author.